

## ABSTRACT

### **DYNAMIC GAIN AND D CHANNEL EQUALIZERS**

5 A beam refraction apparatus includes an input fiber carrying an input  
beam. A wavelength dispersive element is coupled to the input fiber. The  
wavelength dispersive element spreads the input beam in at least one  
dimension as a function of wavelength and generates a dispersed beam. A  
controllable grating reflects the dispersed beam to the wavelength dispersive  
10 element and generates a recombined beam. The controllable grating  
provides a controllable reflectivity as a function of wavelength. An output  
fiber receives the recombined beam. A collimating optical member is  
coupled to the input and output fibers. The collimating optical member  
passes the input beam and the recombined beams in parallel and opposite  
directions.